

Matus, Tim A.

S/N: 10/605,931

REMARKS

Claims 1-27 are pending in the present application. In the Office Action mailed June 16, 2005, the Examiner rejected claims 1-27 under 35 U.S.C. §103(a) as being unpatentable over Luo (USP 5,856,647) in view of Raney et al. (USP 4,967,055). Applicant respectfully disagrees.

The Examiner rejected claims 1-27 under 35 U.S.C. §103(a) as being unpatentable over Luo in view of Raney et al. stating that "Luo teaches the claimed plasma torch including shielding cup, electrode swirl ring, nozzle or tip, which all connect together for torch operation." The Examiner further states that "[t]he claims set forth [sic] that the components such as cup, wlectrode [sic] and tip are connected to form a one-piece assembly to the torch body." The Examiner further states that, "[i]n this respect the patent to Raney et al. is applied for teaching that the more parts the operator has to assemble the greater the likelihood of improper assembly ..." and that "Raney et al. teach [sic] that some of the parts can form an assembly, which can then be secured to the torch head." Applicant does not necessarily disagree that Raney et al. discloses a torch assembly wherein "some of the parts can form an assembly" however, this is not what is called for in the present claims.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. MPEP §2142. To establish a *prima facie* case, the Examiner must not only show that the references include a motivation for the suggested combination but that the combination includes each and every element of the claimed invention. That is, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art." MPEP §2143.01 (emphasis added). "The fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness." *Id.* When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings and the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

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S/N: 10/605,931

Claim 1 calls for, in part, an electrode integrally connected to a shield cup and a tip integrally connected with the shield cup and the electrode to form a one-piece assembly wherein the tip is constructed to secure the one-piece assembly to a torch body. Raney et al. discloses a plasma torch consumable assembly that is substantially similar to the consumable assembly of Luo. That is, each reference discloses a plurality of consumable components which are nested or stacked together during connection of the consumable assembly to a plasma torch. That is, the shield cup, the electrode, and the tip are generally aligned and then the nested components are connected to the plasma torch, respectively.

Raney et al. states that "[t]he invention includes three separate and distinct elements: (1) an electrode having an integral, hollow, interior cooling tube, (2) a tip element with an integral swirl ring, and (3) a nozzle." Col. 3, lns. 11-14. Raney et al. further states that "[i]f the operator fails to include the tip element with the integral swirl ring when re-assembling the torch, the electrode will be driven by the force of the inlet gas to the base of the nozzle when the trigger is depressed." Col. 3, lns. 23-27. That is, the assembly of Raney et al. allows the consumable assembly to be connected to the torch without the tip and swirl ring assembly. The association of the individual sub-assemblies prevents operation of the torch during such improper assembly. That is, the misassembled consumable assembly is still connectable to the torch assembly. The present invention prevents such an occurrence altogether. Raney et al. further states that "[t]he present invention has a unique safety feature which results from the stacking and nesting configuration of the three-part front end assembly 50" and that the "nesting arrangement creates a stacked configuration in the front-end assembly which adds an additional measure of safety in the event an operator fails to properly re-assemble the torch in the field." Col. 7, lns. 37-53. Raney et al. continues, "[i]f an operator is replacing one or more worn parts in the field, it is possible to omit one or more parts during re-assembly." Col. 7, lns. 53-55. That is, the tip, electrode, and shield cup of Raney et al. are not integrally connected as called for in claim 1 if in-field assembly is allowed with omission of one or more of the parts of the assembly.

Applicant does not necessarily disagree that Raney et al. discloses a consumable assembly having a plurality of connected sub-assemblies. Specifically, Raney et al. discloses a two-part electrode assembly wherein the two parts of the electrode assembly are interconnected. With respect to Fig. 3, Raney et al. states that "[t]his electrode is thought to be a unique design as no prior art designs appear to have an interior cooling tube formed as in integral unit with the electrode." Col. 6, lns. 45-47, (emphasis added). That is, Raney et al. discloses an interior cooling tube integrally connected to an electrode. Similarly, with respect to Fig. 5, Raney et al.

Matus, Tim A.

S/N: 10/605,931

discloses a tip and swirl ring assembly wherein the tip and swirl ring are snap-fittingly connected. Raney et al. states that "the tip element with integral swirl ring is generally identified by the bracket numeral 26." Col. 6, lns. 63-64. That is, Raney et al. discloses an electrode integrally connected to an interior cooling tube and a tip element snap-fittingly connected to a swirl ring. This is not what is called for in claim 1.

Claim 1 calls for an electrode integrally connected to a shield cup and a tip integrally connected to the shield cup and the electrode to form a one-piece assembly wherein the tip is constructed to secure the one-piece assembly to a torch body. Raney et al. discloses that the invention thereof includes "three separate and distinct elements" of an electrode, a tip element, and a nozzle. Raney et al. further discloses that the stacked assembly disclosed therein is connectable to the plasma torch body with the omission of "one or more parts during reassembly". Claim 1 calls for, in part, an assembly wherein the tip, shield cup, and electrode are integrally connected to form a one-piece assembly wherein the tip is constructed to secure the one-piece assembly to a torch body. Such an assembly is not taught, suggested, or disclosed in the art of record. Accordingly, Applicant believes claims 1, and the claims that depend therefrom, are patentably distinct over the art of record.

Claim 12 of the present invention calls for, in part, a one-piece consumable assembly comprising a cap, a tip fixedly connected to the cap and constructed to snap-fit the consumable assembly to the torch, an electrode fixedly connected to the cap, and wherein the one-piece consumable assembly is assembled prior to being connected to the torch. Such an assembly is not taught, disclosed, or suggested in the art of record. As argued above with respect to claim 1, Raney et al. discloses an electrode having an integral cooling tube and a tip element with an integral swirl ring. Raney et al. further teaches that the assembly disclosed therein includes "three separate and distinct elements" which includes an electrode having an integral cooling tube, a tip element having integral swirl ring, and a nozzle. Raney et al. further discloses that these elements are nested or stacked together and then connected to the plasma torch body. Raney et al. continues that the assembly can be connected to the torch if an operator omits one or more parts of the assembly during re-assembly. Claim 12 calls for a one-piece consumable assembly that is assembled prior to being connected to the torch. In contrast, the assembly of Raney et al. is disclosed as allowing the re-assembly of the consumable assembly with the omission of one or more parts of the assembly. Furthermore, the nested or stacked orientation of the respective components thereof requires an operator to associate each respective part of the assembly prior to the connection of the assembly to the torch. A one-piece consumable assembly

Matus, Tim A.

S/N: 10/605,931

having a cap, a tip fixedly connected to the cap and constructed to snap-fit the consumable assembly to the torch, and an electrode fixedly connected to the cap as called for in claim 12 is not taught, suggested, or disclosed in the art of record. Accordingly, Applicant believes that which is called in claims 12, and the claims that depend therefrom, is patentably distinct over the art of record.

Claim 17 calls for, in part, a plasma torch consumable kit wherein at least two of a shield cup, an electrode, and a tip are press-fit to one another. As argued above, Raney et al. teaches a consumable assembly wherein an electrode with an integral cooling tube, a nozzle, and a tip with an integral swirl ring are nested or stacked together during re-assembly of the consumable assembly. Raney et al. discloses that it is possible to omit elements of the consumable assembly during re-assembly of the consumable assembly and connection thereof to the torch body. Clearly, if it is possible to omit components of the consumable assembly during re-assembly, the components thereof are not press-fit to one another as called for in claim 17. As such, that which is called for in claim 17 is not taught, shown, suggested, or disclosed in the art of record. Accordingly, Applicant believes that which is called for in claims 17, and the claims that depend therefrom, is patentably distinct over the art of record.

Claim 22 defines a method of manufacturing a plasma torch consumable assembly which includes integrally connecting an electrode within a perimeter of the tip in a single unitary consumable structure. As argued and supported above, the consumable assembly of Raney et al. requires an operator to stack or nest the plurality of "separate and distinct" elements. Again, Applicant does not disagree that Raney et al. discloses a consumable assembly having an electrode with an integral cooling tube and a tip snap-fittingly connected to a swirl ring. However, that is not what is called for in the present claims. Claim 22 calls for, in part, integrally connecting an electrode within a perimeter of a tip in a single unitary consumable structure. Raney et al. states that the consumable assembly includes "three separate and distinct elements" which includes "an electrode" and "a tip element". Col. 3, lns. 11-14. Raney et al. further states that "[i]f the operator fails to include the tip element with integral swirl ring when re-assembling the torch, the electrode will be driven by the force of the inlet gas to the base of the nozzle when the trigger is depressed." Col. 3, lns. 24-28. That is, the electrode is connectable to the torch without the tip element. As such, the consumable assembly of Raney et al. does not teach or suggest integrally connecting the electrode within a perimeter of the tip in a single unitary consumable structure as called for in claim 22. Accordingly, that which is called for in claim 22 is not suggested, taught, or disclosed in the art of record. Accordingly, Applicant believes that

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Matus, Tim A.

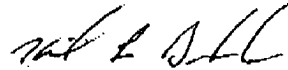
S/N: 10/605,931

which is called for in claims 22, and those claims that depend therefrom, is patentably distinct over the art of record.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-27.

Applicant appreciates the Examiner's consideration of these Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,



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